REMARKS

In the Office Action mailed January 14, 2003, the Examiner rejected the pending claims under 35 U.S.C. § 112, second paragraph. Applicants have amended the claims to address the Examiner's Section 112 rejections and, because the Office has been previously noted that the pending claims are free of the prior art (*see* Office Action mailed April 25, 2002, at p. 24), Applicants submit that the claims are in condition for allowance.

With the entry of the present amendments, Applicants submit that the current claims are sufficiently definite and that the rejections under Section 112 have been overcome and should be withdrawn. Turning to several of the specific rejections, the Examiner objected to the use of the language "at the same time" in claims 60, 106, and 111. Applicants note that the language in these claims has been amended to read "exist in solution at the same time." The referred-to reaction steps in these claims exist in solution at the same time, although the steps do not occur on one particular molecule at the same time. Rather, some molecules may be hybridizing, other molecules may be ligating, and still other molecules may be participating in a SDA reaction at any given time in the same solution, *i.e.*, the noted steps occur at the same time but not on the same molecule.

With regard to the Examiner's objection to the phrase "primer comprising a restriction endonuclease sequence upstream of a sequence specific for the ligated target probe template" in claims 60, 78, 100, 106, 111, 136, 160, 176, and 204, Applicants have amended this phrase to read, "primer comprising a restriction endonuclease sequence on the 5' region of the primer."

With regard to the Examiner's objection that claims 78, 100, 136, and 176 were unclear regarding whether the first and second SDA primers were the same or different, Applicants have amended these claims to specify that the first and second SDA primers are different.

Turning to claims 86 and 184, Applicants have amended the claims to specify that the "competitor" that is referred to in the claims binds to the ligated target probe template.

Applicants submit that the remaining amendments are self-explanatory and require no additional discussion.

As amended, Applicants submit that the claims specify the claimed subject matter with the requisite particularity, that the rejections in the Office Action have been overcome and should be withdrawn, and that the claims should be allowed. Applicants invite the Examiner to telephone the undersigned representative if the Examiner believes that a telephonic interview would advance this case to allowance.

Respectfully submitted,

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Dated: 5/29/03

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Fig. 4 depicts the aortic shunt of Fig. 1A and the venous return cannula of Fig. 3 performing selective cerebral perfusion.

Fig. 5 depicts another embodiment of the aortic shunt including a cooling coil.

Fig. 6 depicts another embodiment of the aortic shunt having a thermostat and a thermometer mounted in its cooling coil.

Fig. 7 depicts another embodiment of the aortic shunt capable of varying the diameter of the cooling coil.

Fig. 8 depicts another embodiment of the aortic shunt having an extended cooling coil.

Fig. 9 depicts another embodiment of the aortic shunt having radiopaque markers mounted on its inflation seal.

Fig. 10A depicts another embodiment of the aortic shunt integrated within an expandable stent.

Fig. 10B depicts the aortic shunt of Fig. 10A deployed in the aorta.

Detailed Description

An embodiment of an aortic shunt constructed according to the present invention useful for providing selective cerebral perfusion in patients suffering from stroke and cardiac arrest is depicted in Fig. 1. The shunt comprises first tubular member 20 and second tubular member 30 nested within the first member. The first member has lumen 25 that communicates with proximal opening 21 and distal opening 22 and is adapted to receive aortic blood flow. The first member also includes a side opening

adapted to communicate with the carotid arteries. An expansion mechanism 10, such as an inflation seal, cylindrical balloon, or toroidal balloons, is mounted on first tubular member 20 and communicates with inflation lumen 35. The aortic shunt can be collapsed to facilitate its insertion and passage through the aorta and can be expanded to frictionally engage the lumen of the aorta by infusing air, gas, or saline through inflation lumen 35.

Second tubular member 30 has a proximal end, a distal end, and lumen 31. The distal end communicates with at least one port mounted on an intermediate portion of first tubular member 20. The port(s) are adapted to communicate with the carotid arteries. The proximal end extends outside of the patient's body and is adapted to receive oxygenated and/or hypothermic blood. Figs. 1B and 1C provide cross-sectional views of the aortic shunt of Fig. 1A through sectional line B-B and C-C, respectively.

Figs. 2A and 2B depict a lateral and an oblique view of another embodiment of the aortic shunt. The shunt comprises second tubular member 30 nested within first tubular member 20. Lumen 25 of first tubular member 20 is adapted to receive aortic blood flow. Lumen 31 of second tubular member 30 is adapted to receive oxygenated and/or hypothermic blood which is passed through ports 33 to perfuse the carotid arteries. Manometer 70 is included in second tubular member 30 for measuring the pressure of the perfused blood. The first tubular member depicted in Figs. 2A and 2B has a length that is shorter than that of the first tubular member in Fig. 1A. The length of the first tubular member generally spans from the ascending aorta upstream of the right brachiocephalic artery to the descending aorta downstream of the left brachiocephalic artery.